Agriculture Water Inventory Tables and Instructions

(as requested in Criteria Section II.G)

The Agricultural Water Inventory should be entered on the MS Excel tables located at www.usbr.gov/mp/watershare/documents/Water_mgmt/index.html. Enter data in the white cells on the spreadsheets. Shaded cells are locked and cannot be changed.

Start by entering the data year (either the last complete calendar year or the last complete water year) in cell D1.

Table 1. Surface Water Supply (requested in Criteria Section II.A. and II.C.)

The numbers in this table should be the best information available on how much surface water actually entered the district distribution system. Make sure all the incoming surface water flows are represented. If necessary, define each water source with a descriptive title (e.g. San Joaquin River, DMC). Water transferred in, water returned from groundwater banks outside the district and small miscellaneous flows may be lumped together in the "Other" column and should also be defined. This table should not include urban recycled water or agricultural return water pumped back into the canals.

Year of Data	2010	Enter data year here

Table 1

Surface Water Supply

2010 Month	Federal Ag Water (acre-feet)	Federal non-Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (acre-feet)	Other Water (define) (acre-feet)	Transfers into District (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
Method								
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0

Measured numbers for the water quantities detailed in these tables are expected. Select a method below that best describes the measurement method for each supply. Fill in the row marked "Method" with the appropriate measurement method type. If two methods are used for one supply, select the predominant one. If there is no flow rate or volumetric measurement, fill in the appropriate estimation method.

Method Definitions:
M1 Measured summation from calibrated measuring devices, accurate to within +/- 6 percent
M2 Measured summation from calibrated measuring devices
M3 Measured summation from measuring devices

C1	Calculated (more than summation) using information from calibrated devices (such as the difference between measurements upstream and downstream of diversion)
C2	Calculated using information from measuring devices
C3	Calculated using estimates from pump run-times and pump efficiency
E1	Estimated using measured information from similar conditions
E2	Estimated using historical information
E3	Estimated using observation
O1	Other (attach a note with descriptions of other methods used)

Table 2. Ground Water Supply (requested in Section II.B.)

The numbers in this table for district pumping should be measured or calculated. For private pumping, an estimate of the volume pumped is normally used. If a yearly total is the best estimate available, it should be distributed over the months based on experience. Choose the appropriate measurement method from the definitions provided on page 5-1, and fill in the row marked "Method". The difference between district and private ground water is determined by how it was delivered. If the water is pumped from private wells into the district distribution system, and sold by the district, then it should be included as district ground water.

Table 2

Ground Water Supply

2010 Month	District Groundwater (acre-feet)	Private Agric Groundwater *(acre-feet)
Method		
January	0	0
February	0	0
March	0	0
April	0	0
May	0	0
June	0	0
July	0	0
August	0	0
September	0	0
October	0	0
November	0	0
December	0	0
TOTAL	0	0

*normally estimated

Table 3. Total Water Supply (requested in Section II.A., II.B., and II.C.)

Except for "Recycled M&I Wastewater" the information in this Table was entered in Tables 1 and 2. If you are using the supplied spreadsheet, all the numbers previously entered are automatically copied to this table, as indicated by light gray boxes. The "Recycled M&I Wastewater" column should be filled out only for M&I recycled wastewater that is delivered into a District Distribution System. Fill in the measurement method type using the definitions provided on page 5-1.

Table 3

Total Water Supply

2010 Month	Surface Water Total (acre-feet)	District Groundwater (acre-feet)	Recycled M&I (acre-feet)	Total District Water (acre-feet)
Method				
January	0	0	0	0
February	0	0	0	0
March	0	0	0	0
April	0	0	0	0
May	0	0	0	0
June	0	0	0	0
July	0	0	0	0
August	0	0	0	0
September	0	0	0	0
October	0	0	0	0
November	0	0	0	0
December	0	0	0	0
TOTAL	0	0	0	0

*Recycled M&I Wastewater is treated urban wastewater that is used for agriculture.

Table 4. **Distribution System** (requested in Section II.G., part 2)

Enter the monthly precipitation for the current year in the Precipitation Worksheet, column C rows 71-82. Enter the monthly evaporation for the current year in the Evaporation Worksheet, column W rows 71-82.

2010 Precipitation Worksheet					2010 Evaporation Worksheet				
	inches precip	ft precip	acres	AF/Year		inches evap	ft evap	acres	AF/YEAR
Jan	0.00	0.00	0.00	0.00	Jan	0.00	0.00	0.00	0.00
Feb	0.00	0.00	0.00	0.00	Feb	0.00	0.00	0.00	0.00
Mar	0.00	0.00	0.00	0.00	Mar	0.00	0.00	0.00	0.00
Apr	0.00	0.00	0.00	0.00	Apr	0.00	0.00	0.00	0.00
May	0.00	0.00	0.00	0.00	May	0.00	0.00	0.00	0.00
Jun	0.00	0.00	0.00	0.00	Jun	0.00	0.00	0.00	0.00
Jul	0.00	0.00	0.00	0.00	Jul	0.00	0.00	0.00	0.00
Aug	0.00	0.00	0.00	0.00	Aug	0.00	0.00	0.00	0.00
Sept	0.00	0.00	0.00	0.00	Sept	0.00	0.00	0.00	0.00
Oct	0.00	0.00	0.00	0.00	Oct	0.00	0.00	0.00	0.00
Nov	0.00	0.00	0.00	0.00	Nov	0.00	0.00	0.00	0.00
Dec	0.00	0.00			Dec	0.00	0.00		
TOTAL	0.00	0.00			TOTAL	0	0.00		

The first column should have the name or number of part of the distribution system, such as Canal T-2, or Section 4 laterals. In the "Length" and "Width" columns, enter the length and average width of those canals and the reservoirs and the surface area will be automatically calculated. The "Precipitation" and "Evaporation" columns will also auto fill. In the "Spillage" column, enter the estimated amount of unrecovered spillage from those canals. Spillage is recovered if it reenters the distribution system later. Enter estimated annual seepage for each unlined portion of the distribution system, storage or regulating reservoir.

Table 4

Agricultural Distribution System

2010 Canal, Pipeline, Lateral, Reservoir	Length (feet)	Width (feet)	Surface Area (square feet)	Precipitation (acre-feet)	Evaporation (acre-feet)	Spillage (acre-feet)	Seepage (acre-feet)	Total (acre-feet)
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
TOTAL				0.0	0.0	0	0	0

Table 5. Crop Water Needs

The first column should list the crops grown in the district (use the crop list provided in Attachment D of the Planner). For each crop, provide the irrigated acres, crop evapotranspiration (ET_{crop}), leaching requirement, and water used for cultural practices (frost protection, pre-irrigation, etc.). Table 5 will combine these values to determine the total water demand of each crop. You may wish to combine crops grown on less than 5% of the total irrigated acreage. To combine crops, determine an average ET_{crop} leaching and cultural requirement for this group of small acreage crops. It is possible for the total irrigated acres to exceed the size of the district due to double cropping. The ET_{crop} for crops in your area can be found using the California Irrigation Management Information System (CIMIS) at www.cimis.water.ca.gov/cimis/info.jsp, Department of Water Resources (DWR) CIMIS Database, www.wateright.org, or obtained from the local farm advisor. The University of California Cooperative Extension (UCCE) can also provide information on coefficients required to determine ET_{crop} and estimating water used for leaching and cultural practices.

Table 5

Crop Water Needs

2010 Crop Name	Area (crop acres)	Crop ET (AF/Ac)	Leaching Requiremen (AF/Ac)	Cultural Practices (AF/Ac)	Effective Precipitation (AF/Ac)	Appl. Crop Water Use (acre-feet)
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
	0	0.00	0.0	0.0	0.0	0
Crop Acres	0					0

Total Irrig. Acres _____ (If this number is larger than your known total, it may be due to double cropping)

Table 6. District Water Budget (requested in Section 2)

Much of the data for this table is copied from the previous tables.

Riparian ET - Estimate the annual consumptive use by riparian vegetation inadvertently or intentionally supplied with district water. Do not include riparian vegetation located at an environmental or recreational resource. Estimate the total acres of riparian vegetation and an average water-use rate to obtain an estimate of consumptive use (based on ET during the months when water is available). Information may also be available from local farm advisors and neighboring districts.

Groundwater Recharge - Quantify water used by the contractor for the purposeful recharge of groundwater, including recharge ponds and injection wells.

Transfers/trades/wheeling – The amount of water the district sold or traded outside the district service area, not listed in Table 1. This will be a negative number.

Non-Agricultural Deliveries - Quantify water delivered that was not used for commercial agricultural practices. This includes deliveries to homes and ranches for residential use, deliveries for commercial and industrial uses, and deliveries to municipal water districts.

Actual Agricultural Water Sales - From district records, quantify the water that was delivered for application to the land. Compare this number with the "Water Available for Sale to Agricultural Customers" calculated on the previous line. If there is significant difference, look for data gaps.

Drain Water Outflow - Quantify the drainwater that leaves the district boundaries from surface ditches or through drainpipes. While an estimate is acceptable, if the estimate exceeds 100 AF per year per outflow location, installation of an outflow measurement device is highly recommended. Reliable outflow data is a best management practice and one of the key components of an accurate water inventory. Districts are now required to begin planning for outflow measurement.

Percolation from Agricultural Land - A rough estimate of the amount of water applied to the land that continues down past the root zone (deep percolation). This value is calculated by the formulas in the spreadsheet.

Table 6

2010 District Water Inventory

Water Supply	Table 3		0
Riparian ET	(Distribution and Drain)	minus	0
Groundwater recharge	(intentional - ponds, injection)	minus	0
Seepage	Table 4	minus	0
Evaporation - Precipitation	Table 4	minus	0
Spillage	Table 4	minus	0
Transfers/trades/wheeling	(out of District)	minus	0
Water Available for sale to customers			0
2010 Actual Agricultural Water Sales	From District Sales Records		0
Private Groundwater	Table 2	plus	0
Crop Water Needs	Table 5	minus	0
Drainwater outflow	(tail and tile, not recycled)	minus	0
Percolation from Agricultural Land	(calculated)		0

Table 7. Influence on Ground Water and Saline Sink

The first part of this table compares the estimated influence on groundwater levels from the district with the actual change in the groundwater storage. There may be a large difference in the quantities. The comparison indicates the impact of district operation on groundwater.

The second part estimates the water that flows to a perched water table or saline sink and is no longer available for use. Examples are flows to evaporation ponds, saline groundwater, or perched water tables where the water is not reused. Implementing BMPs could minimize this "lost" water. In some cases, this lost water may be beneficial in some other way. Districts should provide a statement about how much of this lost water may be "savable" if improvements were funded. This statement will help Reclamation and the district find the most effective areas to apply conservation program funds.

Table 7

Influence on Groundwater and Saline Sink

2010

Agric Land Deep Perc + Seepage + Recharge - Groundwater Pumping = District Influence on	0
Estimated actual change in ground water storage, including natural recharge)	0
Irrigated Acres (from Table 5)	0
Irrigated acres over a perched water table	0
Irrigated acres draining to a saline sink	0
Portion of percolation from agri seeping to a perched water table	0
Portion of percolation from agri seeping to a saline sink	0
Portion of On-Farm Drain water flowing to a perched water table/saline sink	0
Portion of Dist. Sys. seep/leaks/spills to perched water table/saline sink	0
Total (AF) flowing to a perched water table and saline sink	0

Table 8. Annual Water Quantities Delivered Under Each Right or Contract (requested in Section II.A. and II.C.)

Quantify the amount of each type of surface water the District actually received in each of the last 10 years. If the District has sources of surface water that are not listed in the table, add the necessary data in the "Other" column.

Table 8

Annual Water Quantities Delivered Under Each Right or Contract

Year	Federal Ag Water (acre-feet)	Federal non-Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (acre-feet)	Other Water (define) (acre-feet)	Transfers into District (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
2001	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Average	0	0	0	0	0	0	0	0